

IN THE CLAIMS

Please amend the claims as follows.

1. (Original) A method of testing a digital mobile phone network, the network comprising:
 - a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and
 - a plurality of mobile communications devices for radio communications with said base stations;
 - communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data; the method comprising:
 - creating test traffic between a test one of said mobile communications devices and said communications network infrastructure;
 - measuring at least one parameter associated with said traffic to provide measurement data;
 - coding said measurement data representing said measured parameter into said test traffic;
 - demultiplexing traffic and associated signalling data for said test mobile communications device from traffic and signalling data for others of said mobile communications devices on a test interface selected from said infrastructure element interfaces;
 - decoding said measurement data from said demultiplexed traffic for said test mobile communications device; and
 - combining said decoded measurement data and said demultiplexed signalling data for said test mobile communications device to determine a response of said digital mobile phone network to said test traffic.
2. (Original) A method as claimed in claim 1 further comprising:
 - interleaving said measurement data with said test traffic.

3. (Original) A method as claimed in claim 1 wherein said creating and measuring comprise:
 sending test data from said test mobile communications device to said communication network infrastructure;

 receiving response data from said communications network infrastructure; and
 measuring at least one parameter of said response data.

4. (Original) A method as claimed in claim 3 further comprising establishing a packet mode data communications session, said establishing including determining a quality of service profile characterising a target quality of service for the session, said quality of service profile comprising at least one target parameter selected from a group comprising data rate, bit error ratio, and data delay parameters.

5. (Original) A method as claimed in claim 3 wherein said measured parameter is selected from a group comprising data rate, bit error ratio, and data delay parameters.

6. (Original) A method as claimed in claim 1 wherein said creating and measuring comprise:
 establishing a voice mode connection with the communication network infrastructure;
 sending audio test data from said test mobile communications device to said communication network infrastructure;

 receiving audio response data from said communications network infrastructure; and
 measuring at least one parameter of said audio response data; and wherein
 said measurement data is inserted into said test traffic by encoding said measurement data as audio tones.

7. (Original) A method as claimed in claim 6 wherein said measuring comprises comparing said received audio response data with said sent audio test data.

8. (Original) A method as claimed in claim 6 wherein said establishing of a voice mode connection comprises making an outgoing call from said mobile communications device using said digital mobile phone network.
9. (Original) A method as claimed in claim 1 further comprising:
 inserting test characterising data into said test traffic, said test traffic characterising data characterising the type of said test traffic;
 decoding said test characterising data from said demultiplexed traffic; and combining said test characterising data with said decoded measurement data and said demultiplexed signalling data to determine a response of said mobile phone network to said test.
10. (Original) A method as claimed in claim 1 wherein the method comprises using an unmodified consumer mobile communications device as said test mobile communications device to simulate a subscriber to the digital mobile phone network.
11. (Original) A method as claimed in claim 1 wherein said demultiplexing of said traffic and associated signalling data at said test interface comprises:
 recording substantially all the traffic and signalling data at said test interface; and
 demultiplexing said recorded traffic and signalling data to extract said traffic and associated signalling data for said test mobile communications from said recorded data.
12. (Original) A method as claimed in claim 11 wherein said demultiplexing of said traffic and associated signalling data at said test interface further comprises:
 decoding said demultiplexed data according to a protocol stack associated with said test interface.
13. (Original) A method as claimed in claim 1 wherein said combining comprises recording said decoded measurement data and said demultiplexed signalling data in a data store in such a way that time series measurement data and corresponding signalling data are retrievable from the data store.

14. (Original) A method as claimed in claim 1 further comprising outputting a graphical representation of said combined data.

15. (Original) A method as claimed in claim 1 wherein said test traffic comprises packet data traffic; wherein

packet data traffic communicated over a radio interface between a said mobile communications device and a said base station is dynamically allocated a variable level of radio interface resources; and wherein the method further comprises:

outputting a graphical representation of said combined data, said graphical representation providing a representation of said radio interface resources and of said at least one measured parameter over time to permit a comparison of said radio interface resources and said measured parameter.

Claims 16-36 (Cancelled)

37. (Original) Test equipment for testing a digital mobile phone network, the network comprising:

a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and

a plurality of mobile communications devices for radio communications with said base stations;

communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data; the test equipment comprising:

an input to receive data collected at a test one of said interfaces, said received data comprising traffic and signalling data for mobile communications devices using said network;

a demultiplexer to identify test traffic and associated signalling data for a test one of said mobile communications devices from said received data;

a decoder to identify measurement data representing at least one measured parameter associated with said test traffic embedded in said test traffic; and

a data store to store at least said test traffic signalling data in association with said measurement data in such a way that time series measurement data and corresponding signalling data are retrievable from the data store.

38. (Original) Test equipment as claimed in claim 37 further comprising:

an output device to output a graphical representation of said time series measurement data and said corresponding signalling data.

39. (Original) Test equipment as claimed in claim 38 wherein said test traffic comprises packet data traffic; wherein

packet data traffic communicated over a radio interface between a said mobile communications device and a said base station is dynamically allocated a variable level of radio interface resources; and wherein

said graphical representation provides a representation of said radio interface resources and of said at least one measured parameter over time to permit a comparison of said radio interface resources and said measured parameter.

40. (Original) Test equipment as claimed in claim 37 wherein said traffic comprises packet data traffic and wherein said measured parameter is selected from a group comprising data rate, bit error ratio, and data delay parameters.

41. (Original) Test equipment as claimed in claim 37 wherein said demultiplexer includes a decoder to decode a protocol stack associated with said test interface.

42. (Original) Test equipment as claimed in claim 37 comprising a processor and an instruction store storing instructions for controlling the processor to provide said input, said demultiplexer, said decoder and said data store.

43. (Original) Computer readable program code to, when running, implement the functions of the test equipment of claim 37 on a computer system.

44. (Original) A carrier medium carrying the computer readable program code of claim 43.

45. (Original) A carrier medium carrying computer readable code for controlling a computer to test a digital mobile phone network, the network comprising:

- a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and

- a plurality of mobile communications devices for radio communications with said base stations;

- communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data;

- the code comprising computer code for providing:

- an input to receive data collected at a test one of said interfaces, said received data comprising traffic and signalling data for mobile communications devices using said network;

- a demultiplexer to identify test traffic and associated signalling data for a test one of said mobile communications devices from said received data;

- a decoder to identify measurement data representing at least one measured parameter associated with said test traffic embedded in said test traffic; and

- a data store to store at least said test traffic signalling data in association with said measurement data in such a way that time series measurement data and corresponding signalling data are retrievable from the data store.

46. (Original) A method of processing data from a digital mobile phone network to facilitate testing of the network, the network comprising:

a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and

a plurality of mobile communications devices for radio communications with said base stations;

communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data,

the method comprising:

inputting data from a test one of said interfaces, said inputted data comprising traffic and signalling data for mobile communications devices of said plurality of mobile communications devices;

demultiplexing said inputted data to identify test traffic and associated signalling data for a test one of said mobile communications devices;

identifying measurement data representing at least one measured parameter associated with said test traffic embedded in said test traffic; and

storing said test traffic signalling data in association with said measurement data so as to be able to retrieve a time series of measurement data and the corresponding test traffic signalling data.

47. (Original) A method as claimed in claim 46 further comprising:

outputting a graphical representation of said time series of said measurement data and the corresponding signalling data.

48. (Original) A method as claimed in claim 47 wherein said test traffic comprises packet data traffic; wherein

packet data traffic communicated over a radio interface between a said mobile communications device and a said base station is dynamically allocated a variable level of radio interface resources; and wherein

said graphical representation provides a representation of said radio interface resources and of said at least one measured parameter over time to permit a comparison of said radio interface resources and said measured parameter.

49. (Original) A method as claimed in claim 46 wherein said traffic comprises packet data traffic and wherein said measured parameter is selected from a group comprising data rate, bit error ratio, and data delay parameters.

50. (Original) A method as claimed in claim 46 wherein said demultiplexing further comprises decoding a protocol stack associated with said test interface.

51. (Original) Computer readable program code to, when running, implement the method of claim 46 on a computer.

52. (Original) A carrier medium carrying the computer readable program code of claim 51.

53. (Previously Presented) A system for testing a digital mobile phone network comprising the mobile communications equipment for testing a digital mobile phone network and test equipment;

the mobile communications equipment comprising:

a mobile communications device driver having a traffic input for driving traffic to said mobile communications device and a traffic output for outputting a traffic received from said mobile communications device;

a test traffic supply to supply test traffic;

a traffic parameter measurer configured to receive an input from said device driver traffic output and to provide traffic parameter measurement data representing a measured traffic parameter; and

a combiner configured to combine said test traffic from said test traffic supply and measurement data from said traffic parameter measurer and to provide a combined traffic output to said traffic input of said device driver;

the network comprising:

a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and

a plurality of mobile communications devices for radio communications with said base stations;

communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data;

the test equipment comprising:

an input to receive data collected at a test one of said interfaces, said received data comprising traffic and signalling data for mobile communications devices using said network;

a demultiplexer to identify test traffic and associated signalling data for a test one of said mobile communications devices from said received data;

a decoder to identify measurement data representing at least one measured parameter associated with said test traffic embedded in said test traffic; and

a data store to store at least said test traffic signalling data in association with said measurement data in such a way that time series measurement data and corresponding signalling data are retrievable from the data store.

Claims 54-60 (Cancelled)

61. (Previously Presented) The system of claim 53, wherein the mobile communications equipment is adapted to outputs traffic data comprising a combination of test traffic for testing said digital mobile phone network and traffic parameter measurement data to said mobile communications device, said traffic parameter measurement data representing a measured parameter of traffic received from said digital mobile phone network via said mobile communications device as a response to said test traffic.

62. (Previously Presented) A system for testing a digital mobile phone network, comprising: a digital mobile phone network and test equipment operably connectable to the network; the network comprising:

- a communications network infrastructure, the infrastructure having a plurality of elements, including a plurality of radio communications base stations, and having interfaces between said elements; and

- a plurality of mobile communications devices for radio communications with said base stations;

- communications between a said mobile communications devices and said base stations, and signals on interfaces within the network infrastructure, comprising traffic and signalling data;

the test equipment comprising:

- an input to receive data collected at a test one of said interfaces, said received data comprising traffic and signalling data for mobile communications devices using said network;

- a demultiplexer to identify test traffic and associated signalling data for a test one of said mobile communications devices from said received data;

- a decoder to identify measurement data representing at least one measured parameter associated with said test traffic embedded in said test traffic; and

- a data store to store at least said test traffic signalling data in association with said measurement data in such a way that time series measurement data and corresponding signalling data are retrievable from the data store.